# SUSTAINABLE ENERGY MANAGEMENT AS A PRE-REQUISITE FOR SUSTAINABLE DEVELOPMENT: THE CASE OF THE BALKANS COUNTRIES IN THE PROCESS OF THE EU INTEGRATION[1]

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***Abstract:***

*Sustainable development as a theory, a concept and an idea, is a comprehensive framework for the development of mankind in the future, that is, the attempt to plan future development based on past experience, on the one hand, and objectives that are set to a specific or indefinite period of time on the other. The concept of sustainable development implies the need for reviewing and understanding its complex and multi-disciplinary, multi-dimensional and heterogeneous structure, making it one of the most complex social, economic, civil and any other development since the creation of mankind. Any human activity can be observed from different points of view and evaluated on several grounds. Problem of energy security is one of the basic modern challenges in the EU and in the Balkans region. The following main characteristics in the Balkans region were noted: high energy consumption per GDP unit, high values of carbon emission, fossil fuels import dependency, high potential but minimal RES energy production. Further development of regulation framework is a priority for all countries in the region. Respection of the EU regulative in this area is the basic precondition for further stable energy development.*

***Key words****: sustainability; energy; Western Balkans region, EU integrations*

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## INTRODUCTION

In the early 1970s the first significant energy problems struck the world's social scene, based on which ecological requirements were generated. Later, ecological regulations and recommendations have been standardized. That process has not been over yet and it would continue with continuous adjustments. With the development of ecology as a multidisciplinary science and increase of people's awareness on the need to preserve and improve the quality of the environment, the term "sustainable" has begun to be widely used. Sometimes it is quite unjustified and inappropriate, but it is evident that we live in time and environment that is increasingly rich in ecological terms and messages.

At first, ecology, and thus sustainability was seen in a narrow sense, as a set of rules that exist just to prevent environmental pollution. In the seventies the first reported attempts to organize citizens appeared as well as the first regulations in the field of ecology, but all remained limited to the regulation of physical, chemical, mechanical and microbiological impacts of some agents on the immediate environment.

During the time, as the awareness was raised regarding energy problems and due to the increasing number of companies along with their aggressiveness which in order to gain profit, do not pay attention to their harmful impact on the environment, sustainability takes on a new dimension. At that time, there were threatening reports by authoritative agencies warning about the enormous deterioration of the environment and depletion of non-renewable energy resources. The public was to some extent familiar with the problems and demands had emerged for conflict resolution. Professional public and competent institutions are fully aware of the global character of the problem, and then ecology is given a new dimension – intensive studies have begun regarding the degree of exploitation of renewable and non-renewable natural resources. That resulted in the adoption of the concept of sustainable development at the highest level of decision-making as the only prerequisite for long-term quality survival. Because of that sustainability is given a new dimension. It is no longer enough to prevent the immediate harmful impact of energy production process by installing appropriate filters thus regulating the problem of waste to some extent. More should be done and it should be done continuously.

In the early 1980s, it was supposed that the energy sustainable process is the one based on the accepted concept of sustainable global development and the development of such business and any other strategy that adopts the criteria of the mentioned concept. In this period the impact of political structure and citizens was intensified. It was then that relevant laws, regulations, recommendations,

proposals and numerous other initiatives were adopted. The period of the early 1980s can be actually seen as a turning point in understanding and respect of the criteria of sustainability at all levels. Developed countries were leading this movement. Previously adopted regulations on the prevention of pollution of nature are tightened and the new ones were made, which include an increasing number of items. Due to the development of other sciences, such as chemistry, biology and medicine above all, the new findings were made on the harmful effect of certain substances in nature and a man himself. Because of that the list of hazardous and potentially hazardous materials and activities was expanded. Sustainable becomes only that which was not on the list of activities that threaten the environment and then the first cases of rejecting some energy processes took place, which later led to ceasing of the whole power plants which were not environmentally suitable.

## ENERGY SUSTAINABILITY AS CRITERIA OF DEVELOPMENT

Sustainability of energy at that time completely got out of the domain of simple monitoring and sanctioning the work of power plants. New strategies were adopted to preserve the quality of environment (1). Long-term sustainability becomes an important factor in decision-making process when planning new power plants or infrastructure used for the transfer of energy. Ecological movements were strengthened along with political parties that observe the ecology as a priority. In such environment, energy sustainability is given a new importance, as the living environment begins to be seen as unique (global) and the man accepts himself as an inseparable part of nature. Meeting the demand for energy ceased to be a privilege of man, but it became a two-way process of mutual actions and created the need for adequate "trade off" between man and the available energy resources.

Anything that did not adversely affect the nature and the man himself became sustainable. That lead to the expansion of savings of all types of materials, the study of alternative forms of energy was intensified, the problem of nuclear power plants was raised, and the scandals were caused with transportation and storage of hazardous and less hazardous waste. Companies that were not ecologically suitable came under attack of law. They paid huge fines and were boycotted and closed forever.

Regardless of the rapidly expanding field that can be observed from the economic point of view, the specific energy sustainability still remains the focus of observation of men in most developed countries and is still limited to its own

environment. In 1990s, however, environmental suitability and corporate responsibility was given a completely new dimension (2).

Nothing can be observed separately from the living environment as a whole. Science is increasingly trying to study and explain the complexity of interactive processes in nature and man understands that any activity that he undertakes would after a certain period of time affect his health and the quality of life in general.

It is quite clear that the energy sustainability of a particular process or activity can no longer be regarded only as a simple set of numbers and standards. Most people cannot (and does not have to) explain the harmful impact of a process, but can clearly see the consequences. People want not only to avoid such impacts, but to prevent them. Sustainable is not only what has been identified on time, repaired, regulated, tested or abolished. Energy sustainability as a qualitative characteristic is raised to the highest level and becomes part of strategies for development of companies, development of the region and the global community as a whole.

The 1990s brought about a new quality. Energy sustainability definitely ceased to be viewed only as a precondition for the preservation of the environment. Modern man has gradually accepted the fact that the economic suitability should be observed in the broadest sense possible. Sustainability ceased to be seen as a qualitative characteristic of a process, but became a parameter of evaluation in all areas of life and work. Environmental requirements in the broadest sense became something that must be respected in order to survive and make progress.

In the 1990s sustainability began to be widely applied in the description and evaluation of not only economic activities but also in the field of politics, culture, education, sports and entertainment. The environmental impact was examined which any human activity may have on the nature, or a man as an individual and the mankind as a whole. At the end of the last millennium the developed countries fully raised awareness on the need for ecological evaluation and exclusion of anything that can negatively affect the mankind.

*Green Design* or design for the preservation of the environment is defined as follows: "It is a design to minimize environmental burdens, without prejudice to the functionality of the project." This paradigm, which is becoming increasingly important, is a way of increasing energy sustainability of resources and processes, introducing a review of environmental quality in the project design stage.

The new millennium brings about new challenges and problems, but the desire of the international community to make ecological improvements whenever possible

is clear (3). Sustainability, and therefore the sustainability of energy, becomes a philosophy of life. With regards to that, each individual is educated to support the requirements to live healthy and quality life, and to be aware that generations to come have the right to have such a life as well. Sustainability is not easy to achieve – it comes out of the field of laws and fines and becomes a generally accepted human value. Energy sustainability is no longer required, it is a must. Of course, the developed countries have already achieved that level, while the situation is much different in other countries and basically not satisfactory at all.

## DIMENSIONS OF ENERGY SUSTAINABILITY

In order to accept energy sustainability as a business philosophy, first of all it is necessary to determine what is desirable in terms of environmental protection and what should be strived for so as to direct the activities in that way. Defining the concept and the essence of energy sustainability is a particular challenge because the list of ecologically suitable or unsuitable activities or phenomena can never be final.

Energy sustainability, especially in the developed countries, which are leading in this area, has been broadly analysed, so that it can freely be said that the energy sustainability can be sought in any phenomenon and activity that takes place in the sphere of production, transmission and consumption of energy. Energy sustainability, contrary to many qualitative measures, has a kind of temporal, spatial, political, and economic and civilization dimension. It is hard to say that the dimensions of energy sustainability are determined once and for all and not subject to changes. Time to come would inevitably bring many new requirements, but it is still necessary to accurately determine the specific features of these dimensions.

*Time dimension* of energy sustainability implies the respect of the time factor as a very important one in ecology, which includes several methods of observation of the phenomena in the field of energy, which can be described as sustainable or unsustainable. First of all, observation is made, as well as the study and proper assessment of events from the distant and recent past, in order to determine their impacts on the current situation and learn very useful lessons.

Monitoring and controlling of all current phenomena relies directly on the past and most directly on the future (4). Naturally, energy sustainability means conducting appropriate activities now and assuming how they would affect the state of energy in the future because it includes what is most important in sustainable development – timely prevention of all ecologically unacceptable

events and activities. Future which is observed may be limited only partially and for practical reasons, because the whole concept of sustainable development is based in the long term on the principle of intergenerational justice.

*Spatial dimension* is based on generally accepted fact that energy sustainability can and must be observed in any space. Each individual can and should find sustainable and environmental-friendly behaviours and actions in their immediate vicinity and according to that initiate their wishes and requirements. Ecological eligibility is observed, found and presented at the level of settlements, areas, countries, regions and so on. Of special importance is the understanding that energy sustainability should be viewed primarily from the global point of view.

*Political dimension* has become particularly important in the past two decades. Numerous changes in the political arena, misunderstandings and conflicts are associated with the growing insecurity in the field of energy security of the countries and the regions. All developed countries in the world estimate sustainability of energy, both in their own country and the region. Because of that, intensification of political interference can be expected in determining energy sustainability and all it implies in the near or distant future. Respecting the rules of sustainable development has become one of the prerequisites of the integration in world trends.

Economic dimension of energy sustainability is of particular importance, given that the successful economic development and economic stability are of immediate relevance for each individual and is closely linked with the capabilities to meet the needs for energy (5). Nowadays, businesses face great challenges as well as the opportunities to respond to consumer demands that send clear messages that they do not want to support any energy unsustainable or environmentally harmful technologies and products, thus not supporting their manufacturers as well. In most developed countries there is no special requirement for educating citizens in that direction, given that the area is, according to public pressure, fully embedded in the institutions of the system.

The laws are strict, efficient, and apply equally to all. After the bankruptcy of large companies due to paying environmental damages, prison sentences for those responsible and ignoring of all who in any way endanger the quality of the environment, the business processes are reviewed in the developed countries even before they have started so as to determine their ecological suitability. Substantial financial resources are allocated for that purpose. Companies that plan to operate in future have to accept such rules, not only because of legal regulations, but even more because of the demands of consumers that are very clear and even growing.

*Civilization dimension* of sustainability is a kind of summary of all mentioned above and includes much more, so it is particularly difficult to define and almost impossible to restrict. Thus, the energy sustainability must be considered together with the sustainable development of all other activities. Modern man has a right to live in the proper living environment, to which belong water, air, soil, flora and fauna. However, most importantly, the human environment includes other people and their relationships. Physical and chemical parameters are relatively easy to determine and it can easily be identified what is ecologically suitable and what is not, and based on that further actions can be developed and elaborated. As the ecological suitability is observed when it comes to energy technology or a product, thus ecological acceptability is analysed in men, rather to say in ecological suitability of their attitudes, requirements and relationships with other people.

Inseparability of human nature and inevitable development of human relations are the two main factors that determine the sustainability in the entirely new way, which means that the actions of each person be evaluated in terms of ecological suitability. The man is in constant interaction with the nature, with other people and with himself. Through thousands of years of history of mankind, which starts from the period when a man was not only a primitive creature at the lowest level of development, experiences have been accumulated experiences along with the achievements that has become an integral part of every human being.

Facing the numerous problems, misunderstandings, wars and intolerance, strongly influenced the development of the consciousness of a modern man who wants to lead a life of maximum quality. A civilized man should not base his existence on the disappearance and destruction of his environment so as to meet his own, often short and limited objectives. It is unrealistic to expect that the man would give up a certain quality of life on account of the ecology, but with a little more effort and cooperation, energy development in the harmony with nature can be achieved, which will have only long-term positive effects on mental and physical health of each individual.

## BASIC CONCEPT OF ENERGY SUSTAINABILITY IN THE BALKANS REGION

The international community as a whole is a special challenge anyway. Differences in the degree of economic development, political system, culture, religion and customs among different countries and regions have led to different understanding of energy sustainability. Therefore, in order to study these issues it is necessary to briefly examine the historical development in certain parts of the

world, given that the events in the past directly influenced the current level of development of environmental awareness, and therefore the understanding of energy sustainability.

Today, the most developed countries have the most elaborate system regarding managing the quality of the environment, as a direct response to a strong public pressure (6). Thanks to a high degree of economic development, advanced education system and the achieved level of responsibility and political maturity of society, citizens - consumers express their demands openly, seek answers and may opt for environmentally friendly technologies, products or services. Legislation in the field of ecology is developed and functional, so it can be said that the system in the developed countries almost entirely supports the concept of sustainable development. The European Union countries, Scandinavian countries, USA, Canada and Japan are leading in terms of pointing out the importance of ecological suitability in all areas of life and work. Energy sustainability in these countries includes economical use of energy resources, energy-efficient operation, production of energy efficient products and use of renewable energy sources.

On the other hand, there is a number of countries at the medium level of economic development, which are concentrated in Southern and Eastern Europe, which lag behind in terms of attention paid to ecology in general. The history of the development of these countries has been such that it was not been favourable for the development of a healthy economic system, so that ecology has been pushed into the background (7). Thanks to broad education, citizens are familiar with environmental problems, they support the concept of sustainable development, and from time to time highlight their demands, but generally poor conditions in the environment do not create a favourable ground for advancement in the field of ecology. Society that is burdened with many problems is not able to fully address the problem of ecology and sustainable energy development, but companies need to be aware that their future survival, and above all possibilities of exports, depends on business operations which are in line with global environmental standards.

The largest group of countries consists of non-developed and underdeveloped countries at a very low level of economic and social development. They are the victims of historical events and not strong enough to successfully handle their own existential problems, let alone to pass appropriate laws and educate their citizens in the direction of ecological and energy sustainability. It is a paradox that these countries were the example of untouched nature and are rich in flora and fauna, as well as energy and mineral resources, where the man lived on, in our terms, a low level of development. Today, these are the countries whose resources are maximally exploited with little or no environmental protection. The

industrial plants of the so-called dirty technology and huge amounts of waste are moved to the third world countries. Inhumane working conditions, exploitation of child labour, poor health care and the unavailability of broader education, are just some of the indicators of the quality of life.

Sustainable energy development is a kind of desire and the need to harmonize the energy development of mankind in accordance with the possibilities – natural energy resources. Regardless of the comprehensiveness of the problems and diverse situation in the world today and in future, several basic concepts of sustainable development have been defined, as follows (8):

- The concept of non-exhaustible energy resources, includes conservation of both natural and gained total natural energy resources;
- The concept of non-exhaustible natural energy resources results from the previous one, and implies that the natural energy resources are held constant, considered as a whole and per capita, which should be considered especially in case of the constant population growth;
- The concept of elasticity, which would explain the reduction of specific natural energy wealth that is necessary and inevitable, and occurs as a logical consequence of population growth and growth of their demands.

It should be emphasized that these concepts were generated over time after the adoption of Agenda 21 at the UN conference in Rio de Janeiro in 1992. Namely, certain assumptions about the basic concept of sustainable development existed even before. Sometime earlier the basic assumptions of sustainable energy development have been developed, because the energy crisis largely initiated the change in the approach and the mode of exploitation of nature by man. At the very beginning, there was an assumption, actually a requirement to fully preserve the energy resources as it was found. Consequently, it meant the cessation of further exploitation of energy resources and their complete conservation. In certain countries, and in some cases, the idea of total cessation of exploitation of energy resources has been implemented, but it was sporadic and negligible. Given the rapid population growth and growing energy needs, the concept of non-exhausting and acquired natural wealth was abandoned.

After that, taking into account the shortcomings of the concept of non-exhausting and acquired natural resources, the concept of non-exhausting wealth has been adopted which takes into consideration the number of inhabitants on the planet. In fact, this concept implicitly implies that each inhabitant of the planet should be given a certain amount of energy wealth. This concept tried to eliminate the problem of the place of birth of the inhabitant. Actually, it takes into consideration that all natural resources belong to all, regardless of their place of birth or residence. Regardless of the civilization progress, the concept defined in

such a way could not be sustained in the long term, primarily because of the uneven distribution of energy resources on the planet and the lack of the intention to introduce any changes in that field. Energy resources have already become an important element of the world trade and the way of acquiring economic and social power.

Currently the most acceptable concept is the one of elasticity, which takes into account the basic shortcomings of the two previously developed and abandoned concepts of sustainable energy development. The concept has been defined taking into consideration global condition on the planet, and above all the increase in the number of inhabitants and the need for certain quality of life which the inhabitants are not willing to abandon. In such situation, there is a need to revise the current power management mode, both globally and locally. It is necessary to make smaller or greater changes in the traditional way of thinking, doing business and dealing with energy at all levels.

In short, the concept of sustainable energy development, i.e. its basic principle from which all other principles are performed, is based on the principle of intergenerational justice, which includes meeting the energy needs of present generations without compromising the ability to meet the power needs of future generations. In other words, the current generation has an obligation to leave to the next one the energy situation that they had themselves. The basic concept of sustainable energy development can be developed based on different criteria, but they can be generally summarized as follows (9):

- the principle of conservation of the existing non-renewable resources, where, depending on the type, quantity and quality of available resources as well as the needs and opportunities in specific areas, most acceptable way of conservation of existing resources is considered, or permanent reduction of the intensity of their exploitation;
- the principle of exploitation of renewable energy resources, which to some extent replaces the use of non-renewable resources, and allows the use of energy in areas that are insufficiently rich in traditional energy resources, or in hardly accessible areas;
- the principle of energy efficiency, which implies an efficient and economical utilization of energy in all phases of its existence, from the energy that is accumulated in the resources through efficient production, distribution and consumption, to promotion and support to production of goods that use less energy than the same or similar goods;
- the principle of intergenerational justice, which incorporates the rule of energy management in all plans of energy development which would enable future generations to meet their own needs for energy;

- the principle of harmonization of economic development and energy consumption, which determines the above mentioned development, is an especially sensitive principle whose implementation is linked with many problems, because it suggests the need to change traditional ways of thinking. In fact, economic growth was seen as the only measure of the progress of each country and only indicators of economic growth were significant and available in determining the situation in each country and its position in the international community. The need for sustainable energy development imposes the acceptance of the new principle, by which it is necessary to cease economic growth if it leads to excessive depletion of energy and other resources;
- the principle of paying damages caused by excessive and inappropriate use of energy resources, which opens the possibility that all countries in the world and all business entities understand the importance of adequate energy management, and to take on obligations resulting from that and responsibilities if they do not fulfil these obligations;
- the principle of measurability is derived from the need for sustainable strategic management, which is possible only if during the process of planning, implementation and evaluation we deal exclusively with goals and data which are strictly and exactly measurable. Arbitrary and universal definitions, plans and objectives are not able to provide a true picture and ensure proper application of sustainable energy management tools that are available;
- the principle of promotion and education, which imposes the need for continuous promotion of sustainable dealing with energy. Only thorough education which starts at an early age conditions can be created for the long-term responsible treatment of energy and getting benefits in future that is not limited.

These basic principles of energy sustainability highlight the basic framework necessary for planning and implementation of sustainable energy management and present certain framework within which energy management can be implemented. Only through the respect of the basic principles energy stability and long-term energy sustainability can be provided.

## LEGISLATION RELATED TO SUSTAINABLE ENERGY DEVELOPMENT

Global sustainable development strategy is based on application of a certain number of documents, both binding and non-binding. Following selection of sustainable growth as the only development path (UN Conference in Rio de

Janeiro, 1992), a number of regulations has been passed pertaining to this area, and particularly related to the most developed countries in the world, which, at the same time, are the biggest polluters nowadays as well (10).

Energy management related resolutions are of a special global interest since energy production and consumption in the world brings about numerous problems, conflicts and economic crisis (11). Exaggerated usage of energy substances leads to energy resources exhaustion and pollution of the atmosphere, which has been the main reason for adopting the Kyoto Convention, Kyoto Protocol and a number of directives mandatory for the European Union member states.

The Kyoto Protocol together with UN Framework Convention on Climate Change is an international agreement adopted at the Third Meeting of Conference of the Parties to the Convention, held in December, 1997 in Kyoto, Japan. The main difference between the Protocol and the Convention is that Convention urges for industrially developed countries to reduce emission of GNGs (Greenhouse gases), while the Protocol makes it mandatory for them. The EU is highly depended on imported energy and, at the same time a huge emitter of harmful gases. The EU has undertaken the following measures aiming at finding resolution to the issue:
**Introduction of energy saving and rational usage by application of energy efficiency measures,** achieving:

- Total saving of the final energy may go up by 20-40%. – from a production spot, through transport, distribution and up to consumption.
- Energy saving and rational usage measures by application of energy efficiency measures in building, community energy, industrial energy, transport and other places.

**Replacing fossil fuels with renewable energy sources,** achieving:

- Lower level of import dependence
- Decreased emissions – environmental protection
- New vacancies, '3E' effect' (energy, ecology, economics)
- Increased usage of NRES (new renewable energy sources) until 2012, the share of which is 12% in primary energy consumption.

The Kyoto Protocol came into force on 16 February 2005. By the end of 2008, 183 states and one regional economic organization (EES) ratified the Protocol. Its main goal is reduction of global anthropogenic emission of gases with the Green House effect by at least 5% in comparison with the referent year of 1990, in the course of the first mandatory period between 2008 and 2012. Annex A of the Protocol names six gases with the Green House effect (GHG) this reduction is

referring to: carbon dioxide ($CO_2$), methane (CH4), nitrous oxide (N2O) and industrial gases, such as HFC, PFC and sulfur hexafluoride (SF6) group.

Annex B contains a list of state signatories and quantified responsibilities pertaining to decreased emission of GHG in percentages in comparison with the referent year. In other words, quantified responsibility of reduced emission of GHG has been envisaged for 38 industrially developed countries including 11 Central and East European countries with transitional economies. In addition to this, the Protocol leaves states decide by themselves which of the listed six gases will be included into their national strategy for reduction of gases emission.
It is important to note that industrialized states with quantified responsibilities listed in Annex B of the Kyoto Protocol are actually developed countries. State signatories that are not in the Annex list are called non-Annex I partied to the Convention and do not have ten responsibility of a quantified decrease of Green House gases emission within the Kyoto Protocol. They, however, have to fulfil general liabilities envisage by the Convention and the Protocol. Other significant directives pertaining to the energy policy of the European Union are the following:

**Directive 2001/77/EC**

**Directive on promotion of electricity from renewable energy sources in international energy market.**

Promotion of Renewable Energy Sources (RES) implies implementation of a number of activities aiming at long-term reinforcing and maintaining of a certain level of energy production from renewable sources, which is carried out by passing adequate development strategies in every country, identifying national goal, setting a support system and origin guarantees – green certificate, short and simple administrative procedures, defining conditions and tariffs to join the network, etc.

**Directive 2003/30/EC**
**Directive on promotion of the use of biofuels and other renewable fuels for transport**

This Directive refers to increased use of biofuels in the market by 5.75% of the total fuel quantity for transport by the end of 2010.

**Directive 2001/80/EC**
**Directive on emission limits in the air from huge combustion systems**

This Directive refers to huge fuelling systems, of thermal power higher than 50 MW, for which it stipulates strict emission limits in the air for new and existing power plant that are to be achieved by application of the best available technologies. Its full implementation is supposed to be completed by December, 2017 due to significant investment required from the energy sector in order to maintain the standard stipulated by this Directive.

**Directive 1999/32/EC**
**Directive on reduction of sulfur content in liquid fuels**

Implementation of this Directive is envisaged to be completed by 31 December 2011 by the Annex to the Energy Community Treaty, and pertaining to reduction of emissions and setting limits to sulfur dioxide aiming at lessening harmful effects of such emissions on the people and environment. In the period of 1990-1998, the total emission of sulphur dioxide in the EU member states went down by 60% thanks to application of directives on huge systems.

**Directive 96/61/EC**
**Integrated Pollution Prevention and Control (IPPC Directive)**

In essence, the IPPC Directive is about achievement of integrated prevention and supervision of pollution caused by different activities (comprising the whole energy sector). IPPC Directive stipulates measures for prevention or reduction of emission in water, air and land, including measures pertaining to waste, aiming at reaching a high level of environmental protection.

This law is highly important for energy sector since thermal energy plants with heating input of above 50 MW, oil, mineral oils and gas refineries need to obtain an integrated permit for the future work of such systems. 2015 is the deadline for obtaining the integrated permit issued by competent authorities for existing plants and activities. The permit stipulates conditions guaranteeing a high level of environmental protection as a whole.

## CONCLUSION

The stable, safe and sustainable energy development of the Western Balkans region is one of the priorities. Strategic planning of the further development and prediction of the selected options effects are of special interest at the moment when all countries aspire to the EU integration. Harmful gases emission reduction, RES energy production increase and energy efficiency improvement are definitely priorities which have positive economic, energy and ecological

effects. However, the way of achieving these goals mainly depends on specific situation in each individual country.

All defined strategic goals require substantial investments. Apart from slow implementation of regulations this is the essential limitation for effective reforms. Further integration process, mutual cooperation and opening of market and attracting foreign investments, are fundamental preconditions for stable development of all countries in the region.

During selection of further ways of energy system development in the region, coordination with the EU priorities with consideration of specific characteristics and abilities of each individual country should be taken into account. In accordance with the economic situation which is relatively unfavourable (with the exception of Croatia), it is unrealistic to expect significant domestic investments into RES energy production. There are investments, but the effects of them are minimal. A more substantial increase of RES energy amount is currently possible only with foreign investments. Transition to larger amounts of RES energy is additionally hindered by lack of electrical energy market that is monopolistic position of the companies owned by the state. Energy prices are regulated by the state.

In such a situation, countries of the region should strategically direct themselves to gradual improvement of all energy development indicators, but in a way which takes into account their specific characteristics. Accessibility and unlimited resources, reliable technology, experience, ecological standards and low costs of energy produced define large hydro power plants as the best long term option for all considered countries in the region. The strategic tendency in the region involves gradual closing of thermal power plants and increase of other resources energy production. Bearing in mind investments necessary for realization of these goals, enlargement of hydro capacities, in comparison to financing RES energy production, can be a long term acceptable option for the region.

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